



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

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Lieutenant Governor

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Secretary

Martin Suuberg
Commissioner

Date: August 19, 2015

Mr. Chris Aberg
Solutia, Inc.
730 Worcester Street
Springfield, MA 01151

RE: Springfield
Transmittal No.: X266367
Application No.: WE-15-008
Class: *OP*
FMF No.: 298974
AIR QUALITY PLAN APPROVAL

Dear Mr. Aberg:

The Massachusetts Department of Environmental Protection ("MassDEP"), Bureau of Air and Waste, has reviewed your Limited Plan Application ("Application") listed above. This Application concerns the proposed replacement of a chilled condenser that is located on an existing bulk ethyl acetate storage tank (Emission Unit 142 S08, Stack # TP6 T600). In addition to the breathing and working losses of the bulk tank, the condenser will control vapors routed via a new vent line from current truck tank and rail car loading operations (Emission Unit 142 S13). Installation and operation of the new chilled condenser will be at your chemical manufacturing facility located at 730 Worcester Street in Springfield, Massachusetts ("Facility").

This Application was submitted in accordance with 310 CMR 7.02 Plan Approval and Emission Limitations as contained in 310 CMR 7.00 "Air Pollution Control," regulations adopted by MassDEP pursuant to the authority granted by Massachusetts General Laws, Chapter 111, Section 142 A-J, Chapter 21C, Section 4 and 6, and Chapter 21E, Section 6. MassDEP's review of your Application has been limited to air pollution control regulation compliance and does not relieve you of the obligation to comply with any other regulatory requirements.

MassDEP has determined that the Application is administratively and technically complete and that the Application is in conformance with the Air Pollution Control regulations and current air pollution control engineering practice, and hereby grants this **Plan Approval** for said Application, as submitted, subject to the conditions listed below.

Please review the entire Plan Approval, as it stipulates the conditions with which the Facility owner/operator ("Permittee") must comply in order for the Facility to be operated in compliance with this Plan Approval.

1. DESCRIPTION OF FACILITY AND APPLICATION

Solutia Inc. (“Solutia” or “Facility”), a subsidiary of Eastman Chemical Company, owns and operates the Indian Orchard facility located at 730 Worcester St. in Springfield, Massachusetts. The Indian Orchard facility includes a variety of manufacturing operations, a research and development center with laboratories and pilot plant facilities, and offices, warehouses and other facility support functions. Products manufactured are: Butvar® resin, Butvar® Dispersions and Saflex® interlayer.

Solutia is proposing to modify an existing Bulk Ethyl Acetate (EtOAc) Storage Tank designated as emission unit (EU) 142 S08 (Stack #TP6 T600) by replacing its existing chilled condenser. Emission Unit 142 S08 receives EtOAc from the EtOAc Day Tank (EU 140 S08, stack #TP7 T610) and then unloads to either the EtOAc Loading Dock 7 or Dock 9 (EU 142 S13, Stack # TP7 P622 and TP7P624, respectively). The existing condenser is currently only sized to control emissions from breathing losses of the bulk tank and the working losses during loading from the day tank.

The pollutants of concern from this process include ethyl acetate because it is a volatile organic compound (VOC). In order to address environmental and safety concerns, Solutia is proposing to concurrently install a new vent line from the loading docks back to the new condenser. Therefore the new condenser will control VOC emissions from both the breathing and working losses of the bulk ethyl acetate storage tank as well as VOC emissions from loading operations at Dock 7 and Dock 9, which are currently uncontrolled.

Existing specifications for this storage tank and associated loading docks are as follows:

EU #	EU name	Stack #	Current Controls	Plan Approval #
142 S08	Bulk Ethyl Acetate Storage Tank (fixed roof)	TP6 T600	Chilled Condenser	#1-P-07-024 (8/28/2007) #1-P-10-041 (10/19/2011)
142 S13	Ethyl Acetate Loading - Dock 7	TP7 P622	None	MassDEP RACT Approval dated 6/20/1989
	Ethyl Acetate Loading - Dock 9	TP7 P624	None	

The new condenser will be a Doyle and Roth Model #VS126106H single shell and tube condenser with a surface area of 136 square feet. It has been sized larger in order to accommodate the highest possible volumetric flow of railcar or tank-truck loading (350 gallons per minute). As a result of the greater surface area and higher chilling fluid flow rate, the new condenser will control current bulk storage tank loading emissions at or above the control efficiency of the existing condenser ($\geq 90\%$ control efficiency¹). Solutia used a ChemCAD model to estimate the control efficiency (84.7%) of the same condenser when receiving vapors from the new vent line. These control efficiencies were used to estimate post construction

¹ The new condenser will meet the best available control technology (BACT) control efficiency established in Plan Approval #1-P-10-041 dated October 19, 2011.

potential emissions. Procedures will ensure that loading of TP6 T600 from the process and loading of the railcars or tank trucks will never occur at the same time (Table 6, Provision 4).

VOCs are released at the following emission points:

- Bulk EtOAc Tank breathing and working losses (determined by use of the USEPA AP-42, Chapter 7.1, Organic Liquid Storage Tanks);
- Tank truck and rail car loading losses (determine by use of the USEPA AP-42, Chapter 5.2, Transportation and Marketing of Petroleum Liquids); and
- The new vent-line fugitive emissions (determined by use of the USEPA Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, November 1995).

To determine the net change in VOC emissions, Solutia determined historical emissions through use of 2013 and 2014 throughput records and then estimated post construction potential emissions based on the maximum capacity of the facility to produce ethyl acetate. Using this information and the above control efficiencies, Solutia estimated that the net increase in VOC emission will be 0.28 tons per year (TPY).

All operations are subject to the visible emission requirements of 310 CMR 7.06, the dust, odor, construction and demolition requirements of 310 CMR 7.09 and the noise reduction requirements of 310 CMR 7.10.

Solutia stated that the proposed project is not subject to the Environmental Protection Agency's New Source Performance Standards (NSPS) or the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations.

Solutia Inc. is an existing major stationary source of VOCs pursuant to the Emission Offsets and Nonattainment Review regulations of *310 CMR 7.00: Appendix A* because the facility has the potential to emit more than 50 tons per year of VOCs. Therefore, the facility must calculate the net emissions increase for VOCs from the proposed changes to determine the applicability of 310 CMR 7.00: Appendix A. The facility has demonstrated that the replacement of the chilled condenser and addition of the vent line from Loading Docks 7 and 9 will not have a significant net emission increase for VOCs and is therefore not a major modification as defined in 310 CMR 7.00: Appendix A. As a result, the project will not be subject to 310 CMR 7.00: Appendix A.

2. EMISSION UNIT (EU) IDENTIFICATION

Each Emission Unit (EU) identified in Table 1 is subject to and regulated by this Plan Approval:

Table 1			
EU#	Description	Design Capacity	Pollution Control Device (PCD)
142 S08 (Stack #TP6 T600)	EtOAc Storage, fixed roof	150,000 gallon	Doyle & Roth Model #VS126106H Shell & Tube Condenser, 136 ft ²
142 S13 (Stack # TP6 T600)	EtOAc Truck Loading (Dock 7)	≤ 350 gal/min	
	EtOAc Rail Car Loading (Dock 9)		
		Vent line to chilled condenser	

Table 1 Key:

EU# = Emission Unit Number
ft² = square feet
ft³/min = cubic feet per minute

gal/min = gallon per minute
EtOAc = ethyl acetate

3. APPLICABLE REQUIREMENTS

A. OPERATIONAL, PRODUCTION and EMISSION LIMITS

The Permittee is subject to, and shall not exceed the Operational, Production, and Emission Limits as contained in Table 2 below:

Table 2			
EU#	Operational / Production Limit	Air Contaminant	Emission Limit
142 S08 and 142 S13 (both routed to stack #TP6 T600)	Ethyl acetate throughput: ≤ 45,620,000 lbs/yr ≤ 912,400 lbs/mo.	VOC	3.15 TPY 0.63 TPM
	Coolant flow ≥ 24.8 gal/min		
	Coolant temperature ≤ 29°F		

Table 2 Key:

EU# = Emission Unit Number
VOC = Volatile Organic Compounds
°F = degrees Fahrenheit as averaged over a one hour period
gal/min = gallons per minute

TPM = tons per month
TPY = tons per consecutive 12-month period
lb/mo. = pounds per month

B. COMPLIANCE DEMONSTRATION

The Permittee is subject to, and shall comply with, the monitoring, testing, record keeping, and reporting requirements as contained in Tables 3, 4, and 5 below:

Table 3	
EU#	Monitoring and Testing Requirements
142 S08 142 S13 (both routed to stack #TP6 T600)	1. The Permittee shall monitor on a monthly basis the throughput of ethyl acetate (pounds per consecutive 12-month period and pounds per calendar month).
	2. The Permittee shall install and maintain instrumentation to continuously monitor the coolant temperature to the chilled condenser.
	3. The Permittee shall install and maintain instrumentation to periodically monitor the coolant flow rate to the chilled condenser.
	4. The Permittee shall install and maintain an alarm system that will give an audible and visual indication to the control room operator whenever the circulating coolant temperature measured at the condenser inlet is > 29°F. The control room operator will take immediate corrective action if the circulating coolant temperature taken at the condenser inlet is > 29°F.
	5. The Permittee shall install, operate and maintain a low-flow alarm system for the circulating coolant supply flow. The alarm must give an audible and visual indication to the control room operator of a low-flow condition.
	6. The Permittee shall test the coolant temperature alarm and the coolant low-flow alarm monthly.
Facility-wide	7. The Permittee shall monitor all operations to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	8. If and when MassDEP requires it, the Permittee shall conduct emission testing in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13.

Table 3 Key:

EU# = Emission Unit Number
CMR = Code of Massachusetts Regulations
°F = degrees Fahrenheit

USEPA = United States Environmental Protection Agency
MassDEP = Massachusetts Department of Environmental Protection

Table 4	
EU#	Record Keeping Requirements
142 S08 142 S13 (both routed to stack #TP6 T600)	1. The Permittee shall record on a monthly basis the throughput of ethyl acetate (pounds per consecutive 12-month period and pounds per calendar month).
	2. The Permittee shall keep a log of all alarms (including alarm testing), the date, time and cause of the alarm, corrective actions taken, and when the chilled condenser resumed normal operation.
	3. The Permittee shall physically record the circulating coolant flow rate through the chilled condenser at least once per calendar month and adjust the flow (to the set point) as needed (please see Table 5, Provision 2).
Facility-wide	4. The Permittee shall maintain adequate records on-site to demonstrate compliance with all operational, production, and emission limits contained in Table 2 above. Records shall also include the actual emissions of air contaminant(s) emitted for each calendar month and for each consecutive twelve month period (current month plus prior eleven months). These records shall be compiled no later than the 15 th day following each month. An electronic version of the MassDEP approved record keeping form, in Microsoft Excel format, can be downloaded at http://www.mass.gov/dep/air/approvals/aqforms.htm#report .
	5. The Permittee shall maintain records of monitoring and testing as required by Table 3.
	6. The Permittee shall maintain a copy of this Plan Approval, underlying Application and the most up-to-date SOMP for the EUs and PCD(s) approved herein on-site. The Permittee shall affix the SOMP on or near the control panel of the chilled condenser.
	7. The Permittee shall maintain a record of routine maintenance activities performed on the approved EUs, PCD(s) and monitoring equipment. The records shall include, at a minimum, the type or a description of the maintenance performed and the date and time the work was completed.
	8. The Permittee shall maintain a record of all malfunctions affecting air contaminant emission rates on the approved EU(s) and PCD and monitoring equipment. At a minimum, the records shall include: date and time the malfunction occurred; description of the malfunction; corrective actions taken; the date and time corrective actions were initiated and completed; and the date and time emission rates and monitoring equipment returned to compliant operation.
	9. The Permittee shall maintain records to ensure sufficient information is available to comply with 310 CMR 7.12 Source Registration.
	10. The Permittee shall maintain records required by this Plan Approval on-site for a minimum of five (5) years.
	11. The Permittee shall make records required by this Plan Approval available to MassDEP and USEPA personnel upon request.

Table 4 Key:

EU# = Emission Unit Number
PCD = Pollution Control Device
CMR = Code of Massachusetts Regulations

SOMP = Standard Operating and Maintenance Procedure
USEPA = United States Environmental Protection Agency
MassDEP = Massachusetts Department of Environmental Protection

Table 5	
EU#	Reporting Requirements
142 S08 142 S13 (both routed to stack #TP6 T600)	1. The Permittee shall notify the MassDEP within 21 days of when the new chilled condenser and vent line is installed and operating.
	2. In accordance with 310 CMR 7.00 Appendix C(10)(d)3., prepare and submit reports for each calendar quarter (Jan.-March; April-June; July-Aug.; Sept.-Dec.) within 15 days after the end of the quarter, documenting chiller operation and flows, any alarm event(s), reasons for the alarm(s), and corrective action taken in response to the alarm(s).
Facility-wide	3. The Permittee shall submit to MassDEP all information required by this Plan Approval over the signature of a "Responsible Official" as defined in 310 CMR 7.00 and shall include the Certification statement as provided in 310 CMR 7.01(2)(c).
	4. The Permittee shall notify the Western Regional Office of MassDEP, BAW Section Chief by telephone (413) 755-2115, email, marc.simpson@state.ma.us or fax (413) 784-1149, as soon as possible, but no later than one (1) business day after discovery of an exceedance(s) of Table 2 requirements. A written report shall be submitted to the Section Chief at MassDEP within three (3) business days thereafter and shall include: identification of exceedance(s), duration of exceedance(s), reason for the exceedance(s), corrective actions taken, and action plan to prevent future exceedance(s).
	5. The Permittee shall report annually to MassDEP, in accordance with 310 CMR 7.12, all information as required by the Source Registration/Emission Statement Form. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval.
	6. The Permittee shall provide a copy to MassDEP of any record required to be maintained by this Plan Approval within 30-days from MassDEP's request.
	7. The Permittee shall submit to MassDEP for approval a stack emission pretest protocol, at least 30 days prior to emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.
	8. The Permittee shall submit to MassDEP a final stack emission test results report, within 45 days after emission testing, for emission testing as defined in Table 3 Monitoring and Testing Requirements.

Table 5 Key:

EU# = Emission Unit Number
CMR = Code of Massachusetts Regulations

VOC = volatile organic compound
BAW = Bureau of Air and Waste

4. SPECIAL TERMS AND CONDITIONS

The Permittee is subject to, and shall comply with, the following special terms and conditions:

- A. The Permittee shall comply with the Special Terms and Conditions as contained in Table 6 below:

Table 6	
EU#	Special Terms and Conditions
142 S08 142 S13 (both routed to stack #TP6 T600)	1. In accordance with 310 CMR 7.00 Appendix C(9)(b)2., Solutia shall operate and maintain the Doyle & Roth Model #VS126106H Shell & Tube Condenser in accordance with the manufacturer's recommendations or in accordance with other written procedures in order to ensure that it is operated at its design heat transfer efficiency.
	2. The Doyle & Roth Model #VS126106H Shell & Tube Condenser shall operate with a control efficiency $\geq 90\%$ when controlling VOC emissions from the breathing and working losses of the bulk ethyl acetate tank (EU 142 S08) and $\geq 84.7\%$ when controlling VOC emissions from Loading Docks 7 and 9 (EU 142 S13).
	3. The Permittee shall operate the circulating coolant temperature alarm system at all times the South Butvar process is operating, except for periods of calibration checks, zero and span adjustments, preventive maintenance, and malfunction(s).
	4. The Permittee shall implement standard operating procedures to ensure that the loading of the ethyl acetate storage tank and loading of the railcars or tank trucks will not occur at the same time.
	5. The Permittee shall insulate the lines carrying the chilled fluid to the condenser (RACT Compliance Plan Conditional Approval; Final, June 20, 1989).
	6. The Permittee shall update the facilities Leak Detection and Repair (LDAR) Program document to include the new vent line components.
	7. The Permittee shall ensure that an amendment be made to the current operating permit renewal application to include the addition of the new vent line.
Facility-wide	8. Any prior Plan Approvals issued under 310 CMR 7.02 shall remain in effect unless specifically changed or superseded by this Plan Approval. The Facility shall not exceed the emission limits and shall comply with approved conditions specified in the prior Plan Approval(s) unless specifically altered by this Plan Approval.

Table 6 Key:

EU# = Emission Unit Number
CMR = Code of Massachusetts Regulations

VOC = volatile organic compound
RACT = Reasonably Available Control Technology

- B. The Permittee shall install and use an exhaust stack, as required in Table 7, on each of the Emission Units that is consistent with good air pollution control engineering practice and that discharges so as to not cause or contribute to a condition of air pollution. Each exhaust stack shall be configured to discharge the gases vertically and shall not be equipped with any part or device that restricts the vertical exhaust flow of the emitted gases, including but not limited to rain protection devices known as “shanty caps” and “egg beaters.”² The Permittee shall install and utilize exhaust stacks with the following parameters, as contained in Table 7 below, for the Emission Units that are regulated by this Plan Approval:

² An exception is made with the preceding sentence in this Plan Approval for the use of an end of line pressure/vacuum conservation vent.

Table 7				
EU#	Stack Height Above Ground (feet)	Stack Inside Exit Dimensions (inches)	Stack Gas Exit Velocity Range (feet per second)	Stack Gas Exit Temperature Range (°F)
142 S08 and 142 S13 (routed to stack #TP6 T600)	~ 39 feet	2 inches with an end of line pressure/vacuum conservation vent	N/A (variable)	Ambient

Table 7 Key:

EU# = Emission Unit Number
°F = Degree Fahrenheit

~ = approximately
N/A = Not applicable

GENERAL CONDITIONS

The Permittee is subject to, and shall comply with, the following general conditions:

- A. Pursuant to 310 CMR 7.01, 7.02, 7.09 and 7.10, should any nuisance condition(s), including but not limited to smoke, dust, odor or noise, occur as the result of the operation of the Facility, then the Permittee shall immediately take appropriate steps including shutdown, if necessary, to abate said nuisance condition(s).
- B. If asbestos remediation/removal will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that all removal/remediation of asbestos shall be done in accordance with 310 CMR 7.15 in its entirety and 310 CMR 4.00.
- C. If construction or demolition of an industrial, commercial or institutional building will occur as a result of the approved construction, reconstruction, or alteration of this Facility, the Permittee shall ensure that said construction or demolition shall be done in accordance with 310 CMR 7.09(2) and 310 CMR 4.00.
- D. Pursuant to 310 CMR 7.01(2)(b) and 7.02(7)(b), the Permittee shall allow MassDEP and / or USEPA personnel access to the Facility, buildings, and all pertinent records for the purpose of making inspections and surveys, collecting samples, obtaining data, and reviewing records.
- E. This Plan Approval does not negate the responsibility of the Permittee to comply with any other applicable Federal, State, or local regulations now or in the future.
- F. Should there be any differences between the Application and this Plan Approval, the Plan Approval shall govern.
- G. Pursuant to 310 CMR 7.02(3)(k), MassDEP may revoke this Plan Approval if the construction work is not commenced within two years from the date of issuance of this Plan Approval, or if the construction work is suspended for one year or more.
- H. This Plan Approval may be suspended, modified, or revoked by MassDEP if MassDEP determines that any condition or part of this Plan Approval is being violated.
- I. This Plan Approval may be modified or amended when in the opinion of MassDEP such is necessary or appropriate to clarify the Plan Approval conditions or after consideration of a written request by the Permittee to amend the Plan Approval conditions.

- J. The Permittee shall conduct emission testing, if requested by MassDEP, in accordance with USEPA Reference Test Methods and regulation 310 CMR 7.13. If required, a pretest protocol report shall be submitted to MassDEP at least 30 days prior to emission testing and the final test results report shall be submitted within 45 days after emission testing.
- K. Pursuant to 310 CMR 7.01(3) and 7.02(3)(f), the Permittee shall comply with all conditions contained in this Plan Approval. Should there be any differences between provisions contained in the General Conditions and provisions contained elsewhere in the Plan Approval, the latter shall govern.

5. MASSACHUSETTS ENVIRONMENTAL POLICY ACT

MassDEP has determined that the filing of an Environmental Notification Form (ENF) with the Secretary of Energy & Environmental Affairs, for air quality control purposes, was not required prior to this action by MassDEP. Notwithstanding this determination, the Massachusetts Environmental Policy Act (MEPA) and 301 CMR 11.00, Section 11.04, provide certain "Fail-Safe Provisions," which allow the Secretary to require the filing of an ENF and/or an Environmental Impact Report (EIR) at a later time.

6. APPEAL PROCESS

This Plan Approval is an action of MassDEP. If you are aggrieved by this action, you may request an adjudicatory hearing. A request for a hearing must be made in writing and postmarked within twenty-one (21) days of the date of issuance of this Plan Approval.

Under 310 CMR 1.01(6)(b), the request must state clearly and concisely the facts, which are the grounds for the request, and the relief sought. Additionally, the request must state why the Plan Approval is not consistent with applicable laws and regulations.

The hearing request along with a valid check payable to the Commonwealth of Massachusetts in the amount of one hundred dollars (\$100.00) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

This request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority.

MassDEP may waive the adjudicatory hearing-filing fee for a person who shows that paying the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request as provided above, an affidavit setting forth the facts believed to support the claim of undue financial hardship.

Should you have any questions concerning this Plan Approval, please contact Amy Stratford by telephone at (413) 755-2144, or in writing at the letterhead address.

This final document copy is being provided to you electronically by the
Department of Environmental Protection. A signed copy of this document
is on file at the DEP office listed on the letterhead.

Marc Simpson
Section Chief
Bureau of Air and Waste

ecc: MassDEP/Boston - Yi Tian
Peter Czapienski, WERO